THE AMENDMENTS

In The Claims

1.   (Currently Amended)   A method of incrementally updating a checksum in a network data packet header, the method comprising the steps of:

        calculating a partial one's complement sum <u>by subtracting a reduced header part derived from the network data packet header</u> from the checksum;

        modifying at least one field of the <u>reduced header part of the</u> network data packet header; and

        adding a value<u>, comprising a checksum of the modified reduced header part,</u> to the partial one's complement sum to create an incrementally updated checksum.

2.   (Original) The method of claim 1 wherein the step of calculating the partial one's complement sum includes subtracting an IP source address, an IP destination address, and a plurality of protocol bits from the checksum.

3.   (Original) The method of claim 2 wherein the step of calculating the partial one's complement sum further comprises subtracting a source port and a destination port.

4.   (Original) The method of claim 3 wherein the step of calculating the partial one's complement sum further comprises subtracting a sequence number and an acknowledgement number.

5.   (Original) The method of claim 1 wherein the network data packet contains an IPv6 header having at least a source address, a destination address, and a next header field.

6.   (Original) The method of claim 5 wherein the step of calculating the partial one's complement sum includes subtracting the source address, the destination address, and the next header field from the checksum.

7.   (Currently Amended)   A method of incrementally updating a checksum in a network data packet header, the method comprising the steps of:

        receiving, at a packet processor, a data packet having a plurality of header fields comprising a source address, a destination address, and a plurality of protocol bits;

        calculating a partial one's complement sum by subtracting from the checksum at

least one of the plurality of header fields;

modifying the at least one of the plurality of header fields to create aat least one modified header field;

adding to the partial one's complement sum a checksum value of the at least one modified header fields to obtain an incrementally updated checksum; and

transmitting the data packet having the at least one modified header field and incrementally updated checksum from the packet processor.

8. (Original) The method of claim 7 wherein the header fields further comprise a source port and a destination port.

9. (Original) The method of claim 8 wherein the header fields further comprise a sequence number and an acknowledgement number.

10. (Original) The method of claim 7 wherein the header fields are IPv6 header fields and comprise a source address, a destination address, and a next header field.

11. (Currently Amended) A method of incrementally updating a checksum in a network data packet header, the method comprising the steps of:

receiving, at a network switch, a data packet having a plurality of header fields comprising a source address, a destination address, a plurality of protocol bits, a source port, and a destination port;

calculating a partial one's complement sum by subtracting from the checksum at least one of the plurality of header fields;

modifying the at least one of the plurality of header fields to create aat least one modified header field;

adding to the partial one's complement sum a checksum value of the at least one modified header field to obtain an incrementally updated checksum; and

transmitting the data packet having the at least one modified header field and incrementally updated checksum from the network switch.

12. (Original) The method of claim 11 wherein the header fields further comprise a sequence number and an acknowledgement number.

13. (Original) The method of claim 10 wherein the header fields are IPv6 header fields and comprise a source address, a destination address, and a next header field.

3

14.   (Currently Amended) A system for incrementally updating a network data packet checksum, the system comprising:

an input parser configured to identify one or more header fields that make up a reduced header part of an incoming data packet and to compute a partial one's complement sum from athe reduced header part;

a buffer memory for buffering the incoming data packet; and

a circuit connected to the buffer memory for modifying the reduced header part, and computing an incrementally updated network data packet checksum from thea modified reduced header part and the partial one's complement sum.

15.   (Original) The system of claim 14 wherein the reduced header part comprises a source address, a destination address, and a plurality of protocol bits.

16.   (Original) The system of claim 15 wherein the reduced header part further comprises a source port and a destination port.

17.   (Original) The system of claim 16 wherein the reduced header part further comprises a sequence number and an acknowledgement number.

18.   (Original) The system of claim 14 wherein the reduced header part comprises a source address, a destination address, and a next header field.

19.   (Currently Amended) A system for incrementally updating a network data packet checksum, the system comprising:

means for identifying one or more header fields that make up a reduced header part of the incoming data packet;

means for buffering the incoming data packet;

means for computing a partial one's complement sum from thea reduced header part, and an incrementally updated network data packet checksum from the partial one's complement sum; and

means for transmitting the data packet including the incrementally updated network data packet checksum to its next hop.

20.   (Original) The system of claim 19 wherein the reduced header part comprises a source address, a destination address, and a plurality of protocol bits.

4

21. (Original) The system of claim 20 wherein the reduced header part further comprises a source port and a destination port.

22. (Original) The system of claim 21 wherein the reduced header part further comprises a sequence number and an acknowledgement number.

23. (Original) The system of claim 19 wherein the reduced header part comprises a source address, a destination address, and a next header field.